

### 3FE46232AA-AO

Alcatel-Lucent Nokia® 3FE46232AA Compatible TAA 10GBs XGS-PON OLT XFP Transceiver with Burst Mode (SMF, 1577nmTx/1270nmRx, SC, N1, DOM)

#### Features

- Single fiber bi-directional data links TX 9.953Gbps, Burst Mode RX 9.953G/2.488Gbps application
- Complies with ITU G.987.2, ITU G.9807.1
- Complies with INF-8077i
- XFP package with SC Receptacle connector
- Hot Pluggable
- 3.3V power supply
- Single-mode Fiber
- High power 1577nm EML LD & High sensitivity 1270nm APD
- Low EMI and excellent ESD protection
- SD indication
- Digital diagnostic monitor interface



#### Applications

- XGS PON OLT
- Access and Enterprise

#### Product Description

This Alcatel-Lucent Nokia® 3FE46232AA Compatible OLT XFP transceiver provides 10GBase-N1 throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1577nmTx/1270nmRx via an SC connector. It is built to meet or exceed Alcatel-Lucent Nokia® standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products."



### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	VCC3	0	3.6	V
Storage Ambient Temperature	Tstg	-40	+85	°C
Operating Case Temperature	Tc	0	70	°C
Relative Humidity Storage	RH <sub>s</sub>	5	90	%
Relative Humidity Operating	RH <sub>o</sub>	5	85	%

#### Note:

Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.

### Absolute Maximum Ratings: Control Function Logic Levels

Parameter	Symbol	Min.	Max.	Unit	Notes
Tx_DISABLE	Tx_DIS	0	V <sub>CC3</sub> +0.5	V	LVTTTL
Transmitter FAULT	Tx_FAULT	0	V <sub>CC3</sub> +0.5	V	LVTTTL
Burst Mode Signal Detect	Rx_SD	0	V <sub>CC3</sub> +0.5	V	LVTTTL
Receive Reset	Rx_Reset	0	V <sub>CC3</sub> +0.5	V	LVTTTL
Receive Data Rate Select	Rate_Select	0	V <sub>CC3</sub> +0.5	V	LVTTTL
Digital RSSI Trigger Input	TRI	0	V <sub>CC3</sub> +0.5	V	LVTTTL
I <sup>2</sup> C Serial Data	SDA	0	V <sub>CC3</sub> +0.5	V	LVTTTL
I <sup>2</sup> C Serial Clock	SCL	0	V <sub>CC3</sub> +0.5	V	LVTTTL
I2C Clock frequency	tSCL		400	Khz	
Data hold time	tHD:DAT	120		ns	

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC3</sub>	3.135	3.30	3.465	V	
Power Supply Current	I <sub>CC3</sub>		500	750	mA	
<b>Transmitter</b>						
Tx Differential Input Amplitude	V <sub>IN</sub>	120		820	mV	
Tx Differential Input Impedence	Z <sub>IN</sub>	90	100	110	Ω	
Tx_DIS = HIGH (Transmitter OFF / DISABLED)	V <sub>IH</sub>	0.7*V <sub>CC3</sub>		V <sub>CC3</sub>	V	1
Tx_DIS = LOW (Transmitter ON / ENABLED)	V <sub>IL</sub>	0		0.8	V	1
TX_Fault=HIGH (Fault)	V <sub>OH</sub>	2.4		V <sub>CC3</sub>	V	2
TX_Fault=Low (Normal)	V <sub>OL</sub>	0		0.4	V	2
<b>Receiver</b>						
Rx Differential Output Impedence	Z <sub>OUT</sub>	90	100	110	Ω	
Rx_Data Differential Output Voltage Amplitude	V <sub>OUT</sub>	300		800	mV	LVCML
Rx_SD=HIGH	V <sub>OH</sub>	2.4		V <sub>CC3</sub>	V	2
Rx_SD=LOW	V <sub>OL</sub>	0		0.4	V	2
Rx_Reset=HIGH	V <sub>IH</sub>	2.0		V <sub>CC3</sub>	V	1
Rx_Reset=LOW	V <sub>IL</sub>	0		0.8	V	1
Rate_Select=HIGH	V <sub>IH</sub>	2.0		V <sub>CC3</sub>	V	1
Rate_Select=LOW	V <sub>IL</sub>	0		0.8	V	1
TRI=HIGH	V <sub>IH</sub>	0.7*V <sub>CC3</sub>		V <sub>CC3</sub>	V	1
TRI=LOW	V <sub>IL</sub>	0		0.8	V	1

### Notes:

1. LVTTTL (Control INPUT)
2. LVTTTL (Monitor OUTPUT)

## I<sup>2</sup>C Serial Logic

Parameter	Symbol	State	Logic	Min.	Max.	Unit
I <sup>2</sup> C Serial Data	SDA	HIGH	LVTTTL	0.7*V <sub>CC3</sub>	V <sub>CC3</sub>	V
	SDA	LOW	LVTTTL	0	0.8	V
I <sup>2</sup> C Serial Clock	SCL	HIGH	LVTTTL	0.7*V <sub>CC3</sub>	V <sub>CC3</sub>	V
	SCL	LOW	LVTTTL	0	0.8	V

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Transmitter Type		CW Mode EML				
Coupling Mode		AC				
Transmitter Signal Rate	S <sub>down</sub>	9.953			Gb/s	
Average Launch Power	P <sub>OUT</sub>	2		5	dBm	N1
Tolerance to the Transmitter Incident Light Power	T <sub>t</sub>	-15			dB	
Optical Center Wavelength	λ	1575	1577	1580	nm	
Spectral Width	Δλ			1	nm	
Side Mode Suppression Mode	SMSR	30			dB	
Extinction Ratio	ER	8.2			dB	
<b>Receiver</b>						
Receiver Type		Burst Mode APD/TIA				
Optical Center Wavelength	λ	1260	1270	1280	nm	
Damage Optical Power	P <sub>d</sub>	-3			dBm	
Receiver Sensitivity	P <sub>IN</sub>			-26	dBm	@9.953Gbps, N1
	P <sub>IN</sub>			-27.5	dBm	@2.488Gbps, N1
Receiver Optical Overload	P <sub>IN</sub> (MAX)	-5			dBm	@9.953Gbps, N1
	P <sub>IN</sub> (MAX)	-7			dBm	@2.488Gbps, N1
Reflectance of Rx	ORL			-20	dB	@1260~1360nm
Dynamic Range	DR	15			dB	
Immunity from Continuous Identical Digits	CID	72			Bits	

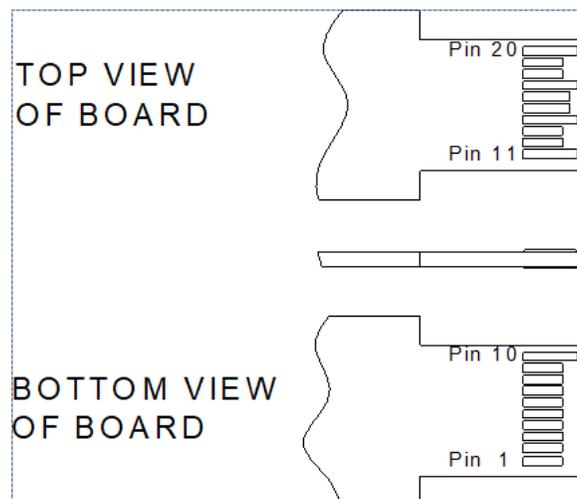
### Notes:

Sensitivity and Overload Test Condition:

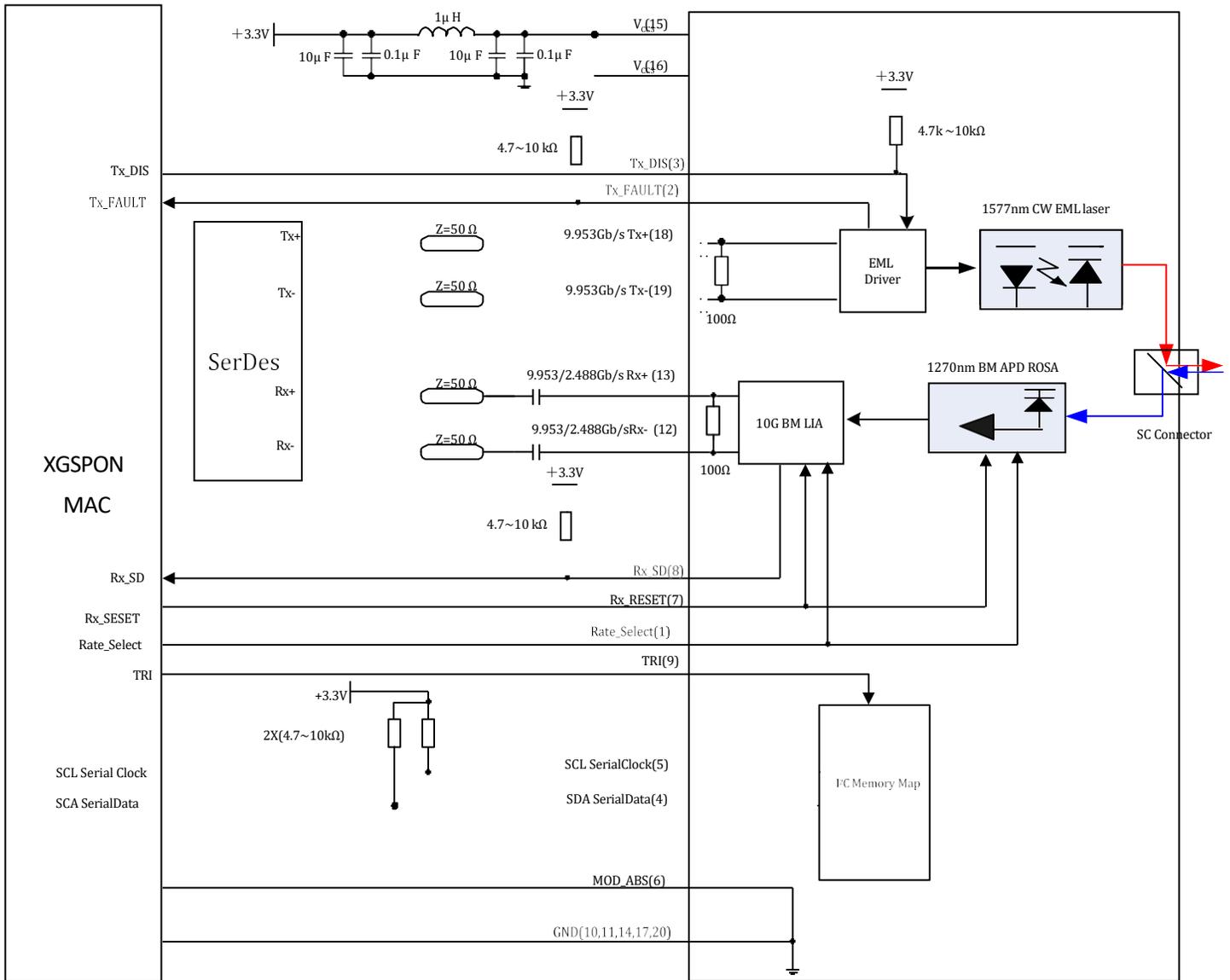
- 1.9.953Gbps: BER@10<sup>-3</sup> PRBS 2<sup>31</sup>-1 ER=6.0dB;
- 2.2.488Gbps: BER@10<sup>-4</sup> PRBS 2<sup>23</sup>-1 ER=8.2dB ;

## Pin Descriptions

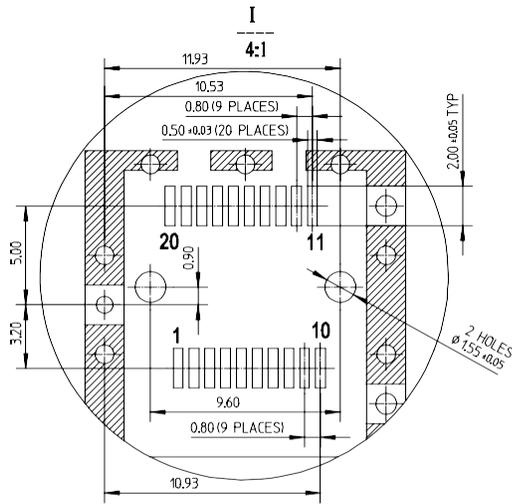
Pin	Symbol	Name/Descriptions	Ref.
1	Rate_Select	Rate selection, Dedicated upstream speed indication. High=10G; LOW=2.5G	
2	Tx_FAULT	Transmitter Fault, LOW = Normal Operation, HIGH = Fault Indication	
3	Tx_DIS	Transmit Disable, LOW = Normal Operation, HIGH = Disables Module	
4	SDA	2-Wire Serial Interface - Serial Data	
5	SCL	2-Wire Serial Interface - Clock Signal	
6	MOD_ABS	Module absent indicate pin. Grounded inside the module.	
7	Rx_RESET	RX Reset Pulse Input for TIA/LIA	
8	Rx_SD	Rx Signal Detect, Assert High when Burst Packet Coming	
9	RSSI_TRI	Receiver Signal Strength Indication trigger input	
10	GND	Module Ground.	
11	GND	Module Ground.	
12	RD-	Receiver Inverted 9.953Gb/s and 2.488Gb/s Data Output; DC coupled inside the module.	
13	RD+	Receiver Non-Inverted 9.953Gb/s and 2.488Gb/s Data Output; DC coupled inside the module.	
14	GND	Module Ground.	
15	VCC3	+3.3V DC Power Supply Input.	
16	VCC3	+3.3V DC Power Supply Input.	
17	GND	Module Ground.	
18	TD+	Transmitter Non-Inverted 9.953Gb/s Data Input.	
19	TD-	Transmitter Inverted 9.953Gb/s Data Input.	
20	GND	Module Ground.	



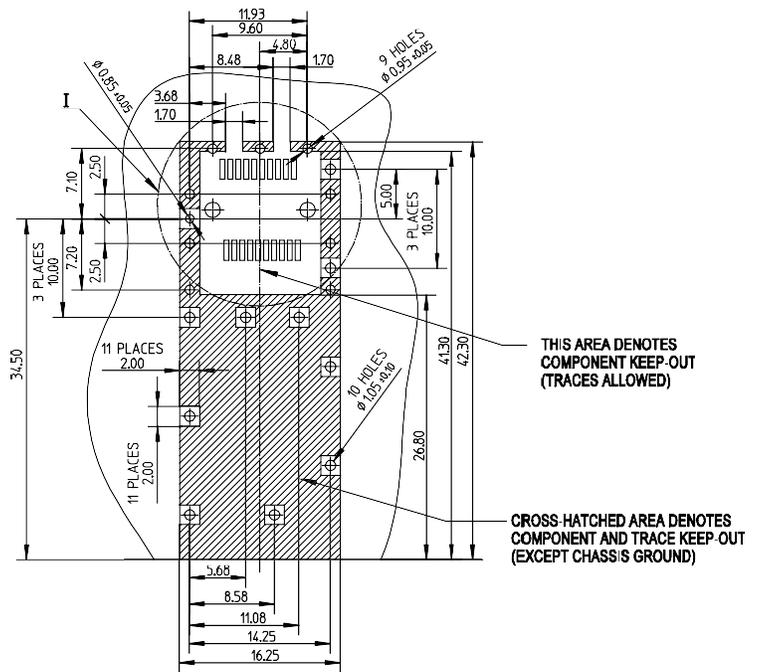
# Electrical Interface



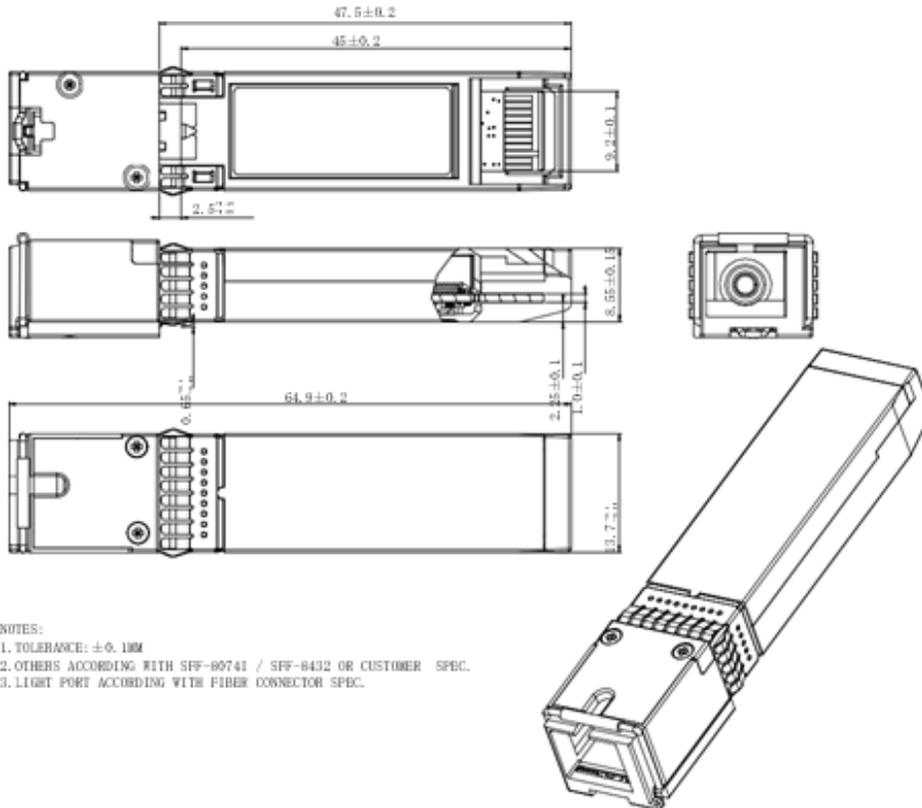
## SFP+ Connector Dimensions



- Notes:**
1. Datum and basic dimensions established by customer
  2. Pads and vias are chassis ground, 11 places
  3. Thru holes, plating optional

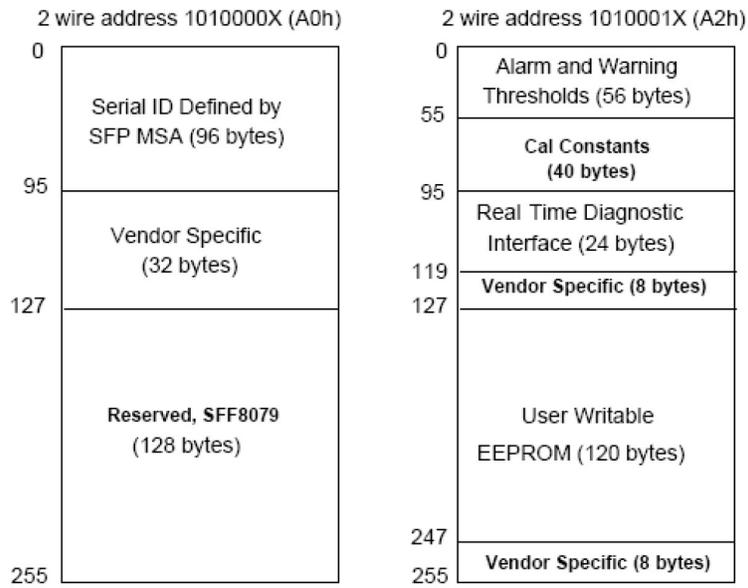


## Mechanical Specifications



## EEPROM Information

EEPROM memory map specific data field description is as below:



## About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is ingrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications ranging from NEBS Level 3 to ISO 9001:2015 with every new development while maintaining the signature reliability of its products.



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